

Notice of Allowability

Application No.

10/612,093

Examiner

Tan Ho

Applicant(s)

BAE ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the pre-amendment filed on 7/03/2003.
2. ☒ The allowed claim(s) is/are 1-18.
3. ☒ The drawings filed on 03 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION**EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

- ✓ - In claim 1, line 5, change "the first metallic pattern" to -- the first metallic pattern section--.

This change was made to provide a proper antecedent basis in the claim.

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance:

Claim 1 recites a multi-band helical antenna comprising a dielectric body having a plurality of dielectric sheets stacked in a predetermined order, at least a first metallic pattern section and a second metallic pattern section provided in the dielectric body, the first metallic pattern section including a plurality of first partially opened metallic loop patterns and a plurality of first connection elements connecting the respective adjacent first partially opened metallic pattern to form a first spiral structure, and the second metallic pattern section including a plurality of second partially opened metallic loop patterns and a plurality of second connection elements connecting the respective adjacent second partially opened metallic pattern to form a second spiral structure, wherein the first and second metallic pattern sections have different entire lengths.

Claim 2 recites a multi-band helical antenna comprising a dielectric body having a plurality of first dielectric sheets of a first thickness t_1 and plurality of second dielectric sheets of a second thickness t_2 that is different from t_1 , the dielectric sheets stacked in a predetermined order, at least a first metallic pattern section and a second metallic pattern section provided in the first dielectric sheets and the second dielectric sheets, the first metallic pattern section including a plurality of first partially opened metallic loop patterns spaced apart from each other by a first distance and a plurality of first connection elements connecting the respective adjacent first partially opened metallic patterns to form a first spiral structure, and the second metallic pattern section including a plurality of second partially opened metallic loop patterns spaced apart from each other by a second distance different from the first distance and a plurality of second connection elements connecting the respective adjacent second partially opened metallic patterns to form a second spiral structure.

Claim 3 recites a multi-band helical antenna comprising a dielectric body having a plurality of dielectric sheets stacked in a predetermined order, at least a first metallic pattern section and a second metallic pattern section provided in the dielectric body, the first metallic pattern section including a plurality of first partially opened metallic loop patterns having a first radius r_1 and a plurality of first connection elements connecting the respective adjacent first partially opened metallic pattern to form a first spiral structure, and the second metallic pattern section including a plurality of second partially opened metallic loop patterns having a second radius r_2 different from r_1 , and a plurality of second connection

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elements connecting the respective adjacent second partially opened metallic pattern to form a second spiral structure.

Claim 4 recites a multi-band helical antenna comprising a dielectric body having a plurality of dielectric sheets stacked in a predetermined order, at least a first metallic pattern section and a second metallic pattern section provided in the dielectric body, the first metallic pattern section including a plurality of first partially opened metallic loop patterns having a first entire length L_1 and a plurality of first connection elements connecting the respective adjacent first partially opened metallic pattern to form a first spiral structure, and the second metallic pattern section including a plurality of second partially opened metallic loop patterns having a second entire length L_2 different from L_1 , and a plurality of second connection elements connecting the respective adjacent second partially opened metallic pattern to form a second spiral structure.

None of the prior arts shows or suggests these helical antennas.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan Ho whose telephone number is (571) 272-1822. The examiner can normally be reached on M-F (8:00AM - 5:00PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TAN HO
PRIMARY EXAMINER